Endoscopic Retrograde Cholangiography with Balloon-Assisted Enteroscopy in a Patient with Roux-Y Anastomosis: How to Reach the Papilla and How to Enter It

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Abstract

Operatively altered anatomy might provide a challenge for endoscopic retrograde cholangiopancreatography. However, with the support of the balloon-assisted enteroscopy technique the access route to the biliary system even in long-limb Roux-Y anastomosis is feasible in most cases.

In this video case report, an 81-year-old woman was symptomatic for stone obstruction of the common bile duct (CBD). Complete gastrectomy had been performed in this patient for stomach cancer many years earlier. Balloon-assisted enteroscopy was used for retrograde access of the duodenum via a Roux-Y anastomosis. There was major difficulty in intubating the CBD via the native papilla in this case because access was prevented by the tangential approach of the enteroscope. After performing an incomplete papillectomy, the insertion of a guidewire into the CBD was feasible and the bile duct stone was removed. This article is part of an expert video encyclopedia.

Keywords

Ballon-assisted enteroscopy; Bile duct stone; Cholangiography; Cholangiopancreatography; Double-balloon enteroscopy; Endoscopic retrograde; Endoscopic retrograde cholangiopancreatography; Endoscopy, gastrointestinal; Enteroscopy; Postoperative anatomy; Video.

Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70205-X

Technique

Endoscopic retrograde cholangiography (ERC) in operatively altered anatomy using a double-balloon assisted ERC technique.

Materials

Endoscope:

- Double-balloon enteroscope (DBE) (working channel: 2.8 mm, working length: 2300 mm, DBE EN-450T5; Fujinon/FujiFilm, Willich, Germany).
- Guidewire (0.032″, 400 cm, Terumo NV-GA32403M Terumo Europe N.V., Leuven, Belgium).
- Catheter (1.8 mm, 260 cm, CAN1-B3-18-260-35; Medwork, Höchstadt/Aisch, Germany).
- 20 mm cut, 2.3 mm, 250 cm, F3QBEW2320250, FTE-B2-Papillotom; Fujinon/ FujiFilm, Willich, Germany.

Endoscopic Procedure

There are several challenges in performing ERC in operatively altered anatomy and Roux-Y anastomosis. The inability to reach the proximal end of the afferent loop may be due to the limited length of the endoscope that is used. This limitation is most often overcome by using balloon-assisted enteroscopes. Next, the impossibility of advancing the wire or catheter into the common bile duct (CBD) is often related to an inadequate position of the endoscope before a native papilla. This is the major drawback in using a forward-viewing enteroscope instead of a side-viewing duodenoscope. Moreover, the inability to advance a stent over an adequately placed guidewire may occur due to the length of the endoscope with increased friction within the working channel, and by significant bending of the endoscope. The working channel of the enteroscope (2.8 mm) further limits the application of accessories such as stents (maximum diameter less than 8.5 Fr).

Key Learning Points/Tips and Tricks

- Endoscopic retrograde cholangiopancreatography using the DBE is feasible in patients with operatively altered anatomy and Roux-Y anastomosis.
- Precut-papillotomy or – in selected cases – (incomplete) papillectomy can help to insert a guidewire or biliary catheter into the CBD.

Complications and Risk Factors

Complications of retrograde cholangiography include pancreatitis, perforation, and bleeding. For balloon-assisted ERC, small bowel perforation – for example, at the anastomosis

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(Roux-Y anastomosis and bilio-digestive anastomosis) – has been reported.

Alternatives

Percutaneous transhepatic cholangiography might offer an alternative in patients in whom endoscopic access is not feasible.

Scripted Voiceover

Time (min:sec)	*Voiceover text*
0:00	An 81-year-old lady with history of complete gastrectomy, presents with bile duct obstruction. Balloon-assisted enteroscopy via a Roux-Y anastomosis is performed.
0:14	The esophago-jejunal anastomosis has been passed. Now, the Roux-Y anastomosis is carefully searched for. Too rapid progression through the small bowel might inadvertently pass the anastomosis and prolong the investigation time. Therefore, gradual exploration of the intestine is important.
0:56	Attaining the Roux-Y anastomosis, it might be difficult to find the afferent loop. Although, intraluminal bile content may be a deceptive indicator for the afferent loop.
1:14	This 'unfolding' of the collapsed small bowel loop is more commonly found in the efferent rather than the afferent small bowel. In this case, the efferent loop was intubated.
1:34	Fluoroscopy and injection of luminal contrast-medium can indicate the course of small bowel loops. In this case, the efferent loop had been deeply intubated. Therefore, we have to withdraw the endoscope.
1:57	Back at the Roux-Y anastomosis, the placement of clips or bites with the biopsy forceps can assist in marking the loop that was already intubated. This helps prevent intubation of the "wrong loop" for a second time.
2:30	Characteristic focal lymphectasia might serve as a marker of endoscopic progression.
2:42	Once the blind ending of the afferent bowel loop is reached, we have to identify the papilla of Vateri, which is mostly located about 5 cm away from the blind duodenal ending. Always remember that you look at the duodenum in the opposite way, coming from the distal part.
2:47	Meticulous investigation of the bowel mucosa and repeatedly controlling the position by use of fluoroscopy helps detect the papilla.
3:12	This is the true challenge during this procedure: since we use a forward-viewing endoscope without an elevator insertion we need to cannulate the papilla in an unfavorable tangential direction.
3:28	Here, we apply incomplete endoscopic papillectomy. Afterwards the bile duct stone is easily removed with a basket.
3:52	Finally, contrast injection over a wire-guided catheter confirms successful complete stone removal.

Further Reading

Albert, J. G.; Ulrich, F.; Zeuzem, S.; Sarrazin, C. Endoscopic-Retrograde Cholangiopancreatography in Patients with Surgical Modification of Anatomy. *Z. Gastroenterol.* **2010**, *48*, 839–849.

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